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EXAMINER	
COUGHLAN, PETER D	
ART UNIT	PAPER NUMBER
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SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/30/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/30/2007.

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Office Action Summary	Application No.	Applicant(s)	
	10/830,177	WILSON, SCOTT B.	
	Examiner	Art Unit	
	Peter Coughlan	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25,31-33,37-39 and 82-99* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25,31-33,37-39,82-85 and 87-99* is/are rejected.

7)☒ Claim(s) *86* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *4/21/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1. This office action is in response to an AMENDMENT entered March 2, 2007 for the patent application 10/830177 filed on April 21, 2004.

2. The First Office Action of October 5, 2006 is fully incorporated into this Final Office Action by reference.

Status of Claims

3. Claims 1-25, 31-33, 37-39, and 82-99 are pending.

Claim Objections

4. Claim 86 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 32 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This claim contains the phrase 'adding first pattern layer'. The specification is silent describing what this means.

This claim must be amended or withdrawn from consideration.

35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-25, 31-33, 37, 39, 82-85, 87-91, 93-96 are rejected under 35 U.S.C. 101 for nonstatutory subject matter. The computer system must set forth a practical

application of that § 101 judicial exceptions to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77. The invention is ineligible because it has not been limited to a substantial practical application. Although the invention classifies incoming information as to a possible medical condition, there needs to be a real world purpose or application concerning this diagnostic procedure. The result has to be a practical application. Please see the interim guidelines for examination of patent applications for patent subject matter eligibility published November 22, 2005 in the official gazette.

In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible and concrete." If the claim is directed to a practical application of the § 101 judicial exception producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S.C. § 101. Taking in information to determine medical diagnoses without a practical application is nothing more than an exercise within the computing device.

The invention must be for a practical application and either:

1) specify transforming (physical thing) or

2) have the FINAL RESULT (not the steps) achieve or produce a

useful (specific, substantial, AND credible),

concrete (substantially repeatable/ non-unpredictable), AND

tangible (real world/ non-abstract) result.

A claim that is so broad that it reads on both statutory and non-statutory subject matter, must be amended.

Claims that recites a computer that solely calculates a mathematical formula is not statutory. There needs to be a purpose or a practical application which the invention provides.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 31-33, 37, 39, 82, 85, 87-89, 93, 99 are rejected under 35 U.S.C. 102(b) (hereinafter referred to as **Elias**) being anticipated by Elias, 'Personal computer system for ECG Recognition in Myocardial infarction diagnosing based on an artificial neural network.'

Claim 1

Elias teaches collecting a plurality of training cases in the medical instrument, wherein each training case has an input state indicative of at least a portion of a first biomedical signal of a particular patient and a corresponding output value indicative of a

medical condition of the particular patient (**Elias,** abstract; 'Training cases' of applicant is equivalent to 'q, r, s, p, t, age and sex' measurements of patient.); generating a neural network in the medical instrument based on the plurality of training cases(**Elias,** figure 2; 'Generate a neural network' of applicant is illustrated by Figure 2 of Elias.); receiving a second biomedical signal of the particular patient in the medical instrument(**Elias,** p1096, C2:3-16, Figure 2; In order to get 'results' the neural network must receive a second 'biomedical signal.'); applying the second biomedical signal to the generated neural network to generate an output of the neural network(**Elias,** p1096, C2:3-16, Figure 2; In order to get 'results' the neural network must be 'applied' with a second 'biomedical signal.'); and identifying a condition of the particular patient based the output of the neural network. (**Elias,** abstract; 'Identifying a condition' of applicant is illustrated by each output nodes of the neural network. These nodes represent 'normal, left ventricular hypertrophy, right ventricular hypertrophy, biventricular hypertrophy, anterior myocardial infarction, inferior myocardial infarction.)

Claim 2

Elias teaches selecting a plurality of time epochs from a record of instrument feature values (**Elias,** abstract; 'Plurality of time epochs' of applicant is equivalent to time and amplitudes' of Elias.); and indicating an output value for each selected time epoch. (**Elias,** abstract; 'Indicating an output value' of applicant is equivalent to the value of the 'amplitude' of Elias.)

Claim 31

Elias teaches applying the neural network in an electronic device to generate a first output value indicative of a classification a first input state (**Elias,** abstract, p1096, C1:23 through C2:2; 'Classification a first input state' of applicant is equivalent to 'training' of a neural network. The training data for the neural network are the p, q, r, s, t, st segment, age and sex of the patient.); detecting a first prediction error in the first output value (**Elias,** Figure 2; To use a back propagation neural network, an error needs to be detected between the projected output and the actual output of the neural network. This corresponds to the 'first output value' of applicant.); creating a first training case based on the first input state wherein the first training case corrects the first prediction error(**Elias,** abstract, p1096, C1:23 through C2:2; 'Training cases' of applicant is equivalent to 'q, r, s, p, t, age and sex' measurements of patient. 'Corrects' is accomplished by using a 'back propagation neural network' of Elias.); reconfiguring the neural network to correctly classify the first training case without retraining the neural network (**Elias,** abstract, p1096, C1:23 through C2:2; 'Reconfiguring' is accomplished using the back propagation method of neural networks. This is where the difference between projected outputs is compared to actual output and the weights of each node is adjusted accordingly. Therefore the neural network 'reconfigures' itself without retraining the neural network.); and applying the neural network to generate a second output value from the electronic device indicative of a classification of a second input state. (**Elias,** p1096, C2:3-16, Figure 2; In order to get 'results' the neural network must be 'applied' with a second 'input state.')

Claim 32

Elias teaches reconfiguring the detection module further comprises adding a first pattern layer node to the neural network based on the first training case. (**Elias,** abstract, p1096, C1:23 through C2:2; The training case or first input state of applicant results in a setting of weights based on training of a neural network. These weights are equivalent to a 'first pattern layer' of applicant.)

Claim 33

Elias teaches wherein the neural network is initially incapable of correctly classifying a first input state. (**Elias,** abstract, p1096, C1:23 through C2:2; When training a neural network (with first input state) it is obvious that it is incapable to classify due to the fact the neural network is in a training state and not a classifying state.)

Claim 37

Elias teaches applying a detection module to classify the first input state into a first event class (**Elias,** abstract, p1096 C1:23 through C2:16, p1095; 'Applying a detection module to classify the first input state into a first event class' means the training of the neural network for the first event or medical condition. This is equivalent to 'the training process' of Elias.); determining that the detection module incorrectly classified the first input state into the first event class (**Elias,** abstract, p1096 C1:23 through C2:16, p1095;.' Determining that the detection module incorrectly classified the

first input state into the first event class' is part of the back propagation process in which the difference between the incorrectly classification and the ideal classification is used to modify the weights of the neural network.); creating the first training case by associating the first input state with a second event class (**Elias,** abstract, p1096 C1:23 through C2:16, p1095;.The 'association' of applicant is equivalent to the relationship between the real output of the node compared to the ideal output of the node.); and reconfiguring the detection module in real-time based on the first training case. (**Elias,** abstract, p1096 C1:23 through C2:16, p1095; 'Reconfiguring' of applicant is equivalent to the adjustment of the weights due to back propagation of the neural network. 'Real time' of applicant is equivalent to 'real time to evaluate' of Elias.)

Claim 39

Elias teaches wherein the first and second input states are indicative of a biomedical signal of at least one patient and wherein the first and second output values are indicative of a medical condition.(**Elias,** abstract; Both the training and the use of Elias pertain to myocardial infarction which is a medical condition.)

Claim 82

Elias teaches receiving a biomedical signal of a particular patient(**Elias,** abstract, p1096, C1:23 through C2:2; 'Receiving a biomedical signal' of applicant is equivalent to 'q, r, s, p, t, age and sex' measurements of the patient of Elias.); identifying a portion of the signal that is indicative of a medical condition of the patient

based on user input(**Elias,** abstract, p1096, C1:23 through C2:2; 'Identifying a portion' of applicant are given by the examples 'q, r, s, p, t, age and sex' measurements of the patient of Elias.); and generating a predictive model for identifying a subsequent medical condition of the patient based on an additional biomedical signal of the patient. (**Elias,** abstract, p1096, C1:23 through C2:2; 'Generating a predictive model' is accomplished by using a 'back propagation neural network' of Elias.)

Claim 85

Elias teaches wherein generating the predictive model comprises training a neural network. (**Elias,** abstract, Elias discloses the use of an artificial neural network for patient specific purposes. Therefore the network must be trained for said specific person.)

Claim 87

Elias teaches wherein identifying the portion of the signal comprises identifying an instrument feature of the signal. (**Elias,** abstract, p1096, C1:23 through C2:2; Examples of 'feature of the signal' of applicant are disclosed by the 'q, r, s, p, t' waves of the patient ECG measurements of patient.)

Claim 88

Elias teaches applying a second biomedical signal of the patient to the generated model to generate an output of the model (**Elias,** abstract, Figure 2, p1096,

C1:23 through C2:2; The second biomedical signal of applicant is equivalent to the ECG signal of Elias. 'Applying' the signal is simply inserting the information into the neural network.); and identifying the medical condition of the patient based on the output of the model. (**Elias,** abstract, 'Identifying a condition', of applicant is illustrated by each output nodes of the neural network. These nodes represent 'normal, left ventricular hypertrophy, right ventricular hypertrophy, biventricular hypertrophy, anterior myocardial infarction, inferior myocardial infarction.)

Claim 89

Elias teaches a memory configured to store a plurality of training cases, wherein each training case has an input state indicative of at least a portion of a first biomedical signal of a particular patient and a corresponding output value indicative of a medical condition of the particular patient (**Elias,** figure 2, abstract; 'Memory configured to store' of applicant is equivalent to the weights in each node of the neural network. The 'first biomedical signal' of applicant is equivalent to the 'signal pre-processing' of Elias. 'Medical condition' of applicant is equivalent to 'myocardial infarction' of Elias.); and a processor configured to: generate a neural network based on the plurality of training cases; receive a second biomedical signal of the particular patient(**Elias,** figure 2; 'Generate a neural network' of applicant is illustrated by Figure 2 of Elias.); apply the second biomedical signal to the generated neural network to generate an output of the neural network (**Elias,** p1096, C2:3-16, Figure 2; In order to get 'results' input into the neural network must occur. An 'input layer of the neural

network is disclosed in Figure 2.); and identify a condition of the particular patient based the output of the neural network(**Elias,** p1096, C2:3-16, Figure 2, abstract; 'Output' of applicant occurs at the 'output layer' of the neural network. Each node represents a medical condition corresponding to myocardial infarction.); and an output device configured to output data indicative of the identified medical condition. (**Elias,** abstract; The 'output device' of applicant is illustrated by each output nodes of the neural network. These nodes represent 'normal, left ventricular hypertrophy, right ventricular hypertrophy, biventricular hypertrophy, anterior myocardial infarction, inferior myocardial infarction.)

Claim 93

Elias teaches means for storing a plurality of training cases, wherein each training case has an input state indicative of at least a portion of a first biomedical signal of a particular patient and a corresponding output value indicative of a medical condition of the particular patient(**Elias,** figure 2, abstract; 'Memory configured to store' of applicant is equivalent to the weights in each node of the neural network. The 'first biomedical signal' of applicant is equivalent to the 'signal pre-processing' of Elias. 'Medical condition' of applicant is equivalent to 'myocardial infarction' of Elias.); and means for processing, said processing means configured to: generate a neural network based on the plurality of training cases(**Elias,** figure 2; 'Generate a neural network' of applicant is illustrated by Figure 2 of Elias.); receive a second biomedical signal of the particular patient (**Elias,** p1096, C2:3-16, Figure 2; In order to get 'results' input into

the neural network must occur. An 'input layer of the neural network is disclosed in Figure 2. This is where input data (second biomedical signal' would enter the neural network.); apply the second biomedical signal to the generated neural network to generate an output of the neural network(**Elias,** p1096, C2:3-16, Figure 2; In order to get 'results' the neural network must be 'applied' with a second 'biomedical signal.'); and identify a condition of the particular patient based the output of the neural network(**Elias,** p1096, C2:3-16, Figure 2, abstract; 'Output' of applicant occurs at the 'output layer' of the neural network. Each node represents a medical condition corresponding to myocardial infarction.); and means for outputting data indicative of the identified medical condition. (**Elias,** abstract; The 'output device' of applicant is illustrated by each output nodes of the neural network. These nodes represent 'normal, left ventricular hypertrophy, right ventricular hypertrophy, biventricular hypertrophy, anterior myocardial infarction, inferior myocardial infarction.)

Claim 99

Elias teaches collecting a plurality of training cases in the medical instrument, wherein each training case has an input state indicative of at least a portion of a first biomedical signal of a particular patient and a corresponding output value indicative of a medical condition of the particular patient(**Elias,** figure 2, abstract; 'Memory configured to store' of applicant is equivalent to the weights in each node of the neural network. The 'first biomedical signal' of applicant is equivalent to the 'signal pre-processing' of Elias. 'Medical condition' of applicant is equivalent to 'myocardial

infarction' of Elias.); generating a neural network in the medical instrument based on the plurality of training cases(**Elias,** figure 2; 'Generate a neural network' of applicant is illustrated by Figure 2 of Elias.); receiving a second biomedical signal of the particular patient in the medical instrument(**Elias,** p1096, C2:3-16, Figure 2; In order to get 'results' the neural network must be 'applied' with a second 'biomedical signal.'); applying the second biomedical signal to the generated neural network to generate an output of the neural network(**Elias,** p1096, C2:3-16, Figure 2, abstract; 'Output' of applicant occurs at the 'output layer' of the neural network. Each node represents a medical condition corresponding to myocardial infarction.); and identifying a condition of the particular patient based the output of the neural network. (**Elias,** abstract; 'Identifying a condition' of applicant is illustrated by each output nodes of the neural network. These nodes represent 'normal, left ventricular hypertrophy, right ventricular hypertrophy, biventricular hypertrophy, anterior myocardial infarction, inferior myocardial infarction.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject

matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-6, 8-10, 13, 14, 17, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elias as set forth above, in view of Katz. (U. S. Patent 5943661, referred to as **Katz**)

Claim 3

Elias does not teach selecting a configuration of instrument features; and wherein the constructing the neural network based on the training cases comprises: defining the neural network topology based on the input values and output values of the plurality of training cases; and determining a kernel width value.

Katz teaches selecting a configuration of instrument features; and wherein the constructing the neural network based on the training cases comprises (**Katz,** C3:45-61; 'Instrument features' of applicant is equivalent to selected data points' of Katz.): defining the neural network topology based on the input values and output values of the plurality of training cases (**Katz,** C2:66 through C3:2; Defining the 'topology' of the neural network of applicant is equivalent to 'transformation into the neural network' of Katz.); and determining a kernel width value. (**Katz,** C3:62 through C4:7; 'Determination of the kernel width is performed by the kernel function of Katz.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by using a neural network as taught by Katz to selecting a

configuration of instrument features; and wherein the constructing the neural network based on the training cases comprises: defining the neural network topology based on the input values and output values of the plurality of training cases; and determining a kernel width value.

For the purpose of taking advantage of the neural network excellent property of classification.

Claim 4

Elias does not teach training the neural network includes determining an optimal kernel width value by minimizing prediction error of the neural network.

Katz teaches training the neural network includes determining an optimal kernel width value by minimizing prediction error of the neural network. (**Katz,** C4:18-22; Applicant uses Parzen's method for population density and Katz uses Parzen's method for determining population density.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by finding the optimal kernel value as taught by Katz to train the neural network includes determining an optimal kernel width value by minimizing prediction error of the neural network.

For the purpose of finding population density.

Claim 5

Elias does not teach determining an optimal input feature kernel width value for each input feature based on the determined optimal kernel width value.

Katz teaches determining an optimal input feature kernel width value for each input feature based on the determined optimal kernel width value. (**Katz,** C4:18-22; The function of Katz is the function of 'x' with respect to sigma. Sigma is based on Sigma.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by finding the optimal input value for the kernel as taught by Katz to determine an optimal input feature kernel width value for each input feature based on the determined optimal kernel width value.

For the purpose of using this value to use for finding the kernel width.

Claim 6

Elias does not teach the neural network is a probabilistic neural network.

Katz teaches the neural network is a probabilistic neural network. (**Katz,** C2:12-23) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by using a probabilistic neural network design as taught by Katz to have the neural network is a probabilistic neural network.

For the purpose of determining an answer with an probability of accuracy associated with it.

Claim 8

Elias does not teach determining the kernel width value is based on a population statistic of the plurality of training cases.

Katz teaches determining the kernel width value is based on a population statistic of the plurality of training cases. (**Katz,** C4:18-22; Katz illustrates as population grows, kernel width decreases, thus it is based upon population statistics.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by finding the kernel width as taught by Katz to determine the kernel width value is based on a population statistic of the plurality of training cases.

For the purpose of find the kernel width based on population statistic or population density.

Claim 9

Elias does not teach determining the kernel width value is based at least in part on the mathematical term of the number of training cases raised to an exponent power of about negative one-fifth.

Katz teaches determining the kernel width value is based at least in part on the mathematical term of the number of training cases raised to an exponent power of about negative one-fifth. (**Katz,** C3:62 through C4:22; 'About negative 1/5' is close enough to 'negative ½' of Katz.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by using training cases in the denominator as a root n root function as taught by Katz to the

kernel width value is based at least in part on the mathematical term of the number of training cases raised to an exponent power of about negative one-fifth.

For the purpose of allowing the width to grow exponentially based of training cases

Claim 10

Elias does not teach determining the kernel width value is based on the population distribution of the plurality of training cases.

Katz teaches determining the kernel width value is based on the population distribution of the plurality of training cases. (**Katz,** C4:18-22; Katz illustrates as population grows, kernel width decreases, thus it is based upon population statistics. This would be the same in a functioning neural network as it would be in a training neural network.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by determining kernel width as taught by Katz to have the kernel width value is based on the population distribution of the plurality of training cases.

For the purpose of using population distribution or population density as a basis of finding the kernel width.

Claim 13

Elias does not teach normalizing the input values of the plurality of training cases based on the standard deviation for each input feature.

Katz teaches normalizing the input values of the plurality of training cases based on the standard deviation for each input feature. (**Katz,** C4:18-22; The 'standard deviation' of each input node can be used to normalized the training data of applicant is illustrated by the generation of the value of sigma which is one standard deviation of Katz.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by using standard deviation as a base for normalizing input values as taught by Katz to normalize the input values of the plurality of training cases based on the standard deviation for each input feature.

For the purpose of using the Gaussian distribution as a bases for input values

Claim 14

Elias does not teach determining a plurality of partitions based on the pattern layer nodes of the neural network wherein each partition comprises a plurality of groups of pattern layer nodes; selecting one of the plurality of partitions based on a partition metric; and for each group of pattern layer nodes within the selected partition: replacing the group of pattern layer nodes with a compressed pattern layer node; and adjusting the link weights between the compressed pattern layer node and any summation layer nodes to reflect the number of replaced pattern layer nodes.

Katz teaches determining a plurality of partitions based on the pattern layer nodes of the neural network wherein each partition comprises a plurality of groups of pattern layer nodes (**Katz,** C1:41-58; 'Determining a plurality of partitions' of applicant is equivalent to 'classification' of Katz.); selecting one of the plurality of partitions based on

a partition metric (**Katz,** C8:42-61; 'Partition metric' of applicant is equivalent to 'weights' of Katz.); and for each group of pattern layer nodes within the selected partition (**Katz,** Fig. 4; Katz illustrates that a group of nodes in layer 'L' corresponds to a node in layer 'M'. This group on nodes in layer 'L' is equivalent to a 'group of pattern layer nodes' of applicant.): replacing the group of pattern layer nodes with a compressed pattern layer node (**Katz,** C2:66 through C3:2; 'Compressed pattern layer node' of applicant is accomplished by 'data compression scheme' of Katz.); and adjusting the link weights between the compressed pattern layer node and any summation layer nodes to reflect the number of replaced pattern layer nodes. (**Katz,** C2:12-23; By training, weights are adjusted so that output nodes reflect input pattern layer nodes.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by finding partitions for the neural network as taught by Katz to determine a plurality of partitions based on the pattern layer nodes of the neural network wherein each partition comprises a plurality of groups of pattern layer nodes; selecting one of the plurality of partitions based on a partition metric; and for each group of pattern layer nodes within the selected partition; replacing the group of pattern layer nodes with a compressed pattern layer node; and adjusting the link weights between the compressed pattern layer node and any summation layer nodes to reflect the number of replaced pattern layer nodes.

For the purpose of aiding in the accuracy of the neural network.

Claim 17

Elias does not teach the partition metric comprises determining an error value for each partition.

Katz teaches the partition metric comprises determining an error value for each partition. (**Katz,** C9:23 through C10:12; 'Error value' of applicant is equivalent to 'error bars' of Katz.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by finding the error value for each partition as taught by Katz to have the partition metric comprises determining an error value for each partition.

For the purpose of generating an accuracy level with every classification result.

Claim 18

Elias does not teach the partition metric comprises determining a compression ratio for each partition.

Katz teaches the partition metric comprises determining a compression ratio for each partition. (**Katz,** C2:44-56; 'Compression ratio' of applicant is equivalent to 'compression procedures' of Katz.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by teaching within each partition, determine the compression ration as taught by Katz to have the partition metric comprises determining a compression ratio for each partition.

For the purpose of in an attempt to balance the compression versus loss of accuracy

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Elias and Katz as set forth above in view of Huo. (U. S. Patent 6282305, referred to as **Huo**)

Claim 19

Elias and Katz do not teach the partition metric comprises determining a Minimum Description Length for each partition.

Huo teaches the partition metric comprises determining a Minimum Description Length for each partition. (**Huo,** C20:53-64; 'Minimum Description Length' of applicant is equivalent to 'minimum squared difference' of Huo.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias and Katz by finding the minimum length needed as taught by Huo to

the partition metric comprises determining a Minimum Description Length for each partition.

For the purpose of finding the smallest portion needed for accurate results in lower percentage of extreme input measurements.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Elias and Katz as set forth above, in view of Wasserman. (U. S. Patent 5559929, referred to as **Wasserman**)

Claim 7

Elias and Katz do not teach the neural network is a generalized regression neural network.

Wasserman teaches the neural network is a generalized regression neural network.(**Wasserman,** C9:60 through C10:3) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias and Katz by using a regression neural network as taught by Wasserman to have the neural network to be a generalized regression neural network.

For the purpose of allowing training on new data without requiring previous data to be available.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 15, 16, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Elias and Katz as set forth above, in view of Straforini. (U. S. Patent 6092059, referred to as **Straforini**)

Claim 15

Elias and Katz do not teach the partition metric comprises determining a BIC value for each partition.

Straforini teaches the partition metric comprises determining a BIC value for each partition. (**Straforini,** C17:23-35; 'BIC value' of applicant is equivalent to 'bayes based configuration' of Straforini.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias and Katz by using a BIC value as taught by Straforini to have the partition metric comprises determining a BIC value for each partition.

For the purpose of using Bayesian Information Criterion is used to determine which instrument configuration is the most optimal.

Claim 16

Elias and Katz do not teach the partition metric comprises selecting the maximum BIC value.

Straforini teaches the partition metric comprises selecting the maximum BIC value. (**Straforini,** C17:64 through C18:15; 'Maximum BIC value' of applicant is equivalent to 'first feature in the list is that with the highest rank' of Straforini.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias and Katz by choosing the maximum as taught by Straforini to have the partition metric comprised by selecting the maximum BIC value.

For the purpose of selecting the best configuration.

Claim 20

Elias does not teach the partition metric comprises determining a BIC value.

Straforini teaches the partition metric comprises determining a BIC value. (**Straforini,** C17:23-35; 'BIC value' of applicant is equivalent to 'bayes based configuration' of Straforini.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias and Katz by using the BIC value as taught by Straforini to have the partition metric comprised by determining a BIC value.

For the purpose of using Bayesian Information Criterion is used to determine which instrument configuration is the most optimal.

Katz teaches an error value (**Katz,** C9:23 through C10:12; 'Error value' of applicant is equivalent to 'error bars' of Katz.), and a compression ratio value for each partition. (**Katz,** C2:44-56; 'Compression ratio' of applicant is equivalent to 'compression procedures' of Katz.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the

> subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 24, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Elias and Katz as set forth above, in view of Vaithyanathan. (U. S. Patent 5857179, referred to as **Vaithyanathan**)

Claim 24

Elias and Katz do not teach selecting one of the determined plurality of partitions based on a partition metric comprises: determining, for each partition within the determined plurality of partitions, a centroid value for each group of pattern layer nodes within that partition.

Vaithyanathan teaches selecting one of the determined plurality of partitions based on a partition metric comprises: determining, for each partition within the determined plurality of partitions, a centroid value for each group of pattern layer nodes within that partition. (**Vaithyanathan,** C10:22-42) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias and Katz by find the centroid value as taught by Vaithyanathan to select one of the determined plurality of partitions based on a partition metric comprises: determining, for each partition within the determined plurality of partitions, a centroid value for each group of pattern layer nodes within that partition.

For the purpose is so similar patterns can be merged and described by their centroid and weight.

Claim 25

Elias and Katz do not teach selecting one of the determined plurality of partitions based on a partition metric further comprises: determining, for each partition within the determined plurality of partitions, a covariance value for each group of pattern layer nodes within that partition.

Vaithyanathan teaches selecting one of the determined plurality of partitions based on a partition metric further comprises: determining, for each partition within the determined plurality of partitions, a covariance value for each group of pattern layer nodes within that partition. (**Vaithyanathan,** C6:50-67) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias and Katz by finding the covariance value as taught by Vaithyanathan to select one of the determined plurality of partitions based on a partition metric further comprises: determining, for each partition within the determined plurality of partitions, a covariance value for each group of pattern layer nodes within that partition.

For the purpose of using an improved compression method may be employed wherein each pattern is described by its centroid, weight and covariance matrix.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Elias, Katz and Straforini as set forth above, in view of Vaithyanathan. (U. S. Patent 5857179, referred to as **Vaithyanathan**)

Claim 21

Elias, Katz and Straforini do not teach the K-means clustering method is applied to determine a plurality of partitions.

Vaithyanathan teaches the K-means clustering method is applied to determine a plurality of partitions. (**Vaithyanathan,** C2:66 through C3:9) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias, Katz and Straforini by using k-means as taught by Vaithyanathan to have the K-means clustering method is applied to determine a plurality of partitions.

For the purpose of using an industry standard method of clustering data.

Claim 22

Elias, Katz and Straforini the hierarchical clustering method is used to determine the plurality of partitions.

Vaithyanathan teaches the hierarchical clustering method is used to determine the plurality of partitions. (**Vaithyanathan,** C8:12-23) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias, Katz and Straforini by using hierarchical clustering as taught by Vaithyanathan to have the hierarchical clustering method that is used to determine the plurality of partitions.

For the purpose of using an industry standard method of clustering data.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Elias Katz, Straforini and Vaithyanathan as set forth above, in view of Banavar. (U. S. Patent 6336119, referred to as **Banavar**)

Claim 23

Elias, Katz, Straforini and Vaithyanathan do not teach the step of determining a plurality of partitions comprises applying the hierarchical clustering method to create partitions containing between about 1 and about 20 groups.

Banavar teaches the step of determining a plurality of partitions comprises applying the hierarchical clustering method to create partitions containing between about 1 and about 20 groups.(**Banavar,** abstract; 'Between about 1 and 20 groups' of applicant is equivalent to 'C clusters where C>1' of Banavar.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias, Katz, Straforini and Vaithyanathan by keeping group size below 20 groups as taught by Banavar to have the step of determining a plurality of partitions comprises applying the hierarchical clustering method to create partitions containing between about 1 and about 20 groups.

For the purpose of balancing the compression versus loss of accuracy

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Elias and Katz as set forth above, in view of Oriol. (U. S. Patent Publication 20010014776, referred to as **Oriol**)

Claim 11

Elias and Katz do not teach the population distribution of the plurality of training cases is approximately Normal.

Oriol teaches the population distribution of the plurality of training cases is approximately Normal. (**Oriol,** ¶0086; 'Normal population distribution' of applicant is equivalent to 'Gaussian windows' of Oriol.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias and Katz by using normal distributions as taught by Oriol to have the population distribution of the plurality of training cases that is approximately Normal.

For the purpose of approximating sigma in a standard distribution.

Claim 12

Elias does not teach normalizing the input values of the plurality of training cases based on the standard deviation for each input feature.

Katz teaches normalizing the input values of the plurality of training cases based on the standard deviation for each input feature. (**Katz,** C4:18-22; The 'standard deviation' of each input node can be used to normalized the training data of applicant is illustrated by the generation of the value of sigma which is one standard deviation of Katz.)

Elias and Katz do not teach the step of determining the kernel width value comprises defining the kernel width value to be a number in the range 0.1 to 1.0.

Oriol teaches the step of determining the kernel width value comprises defining the kernel width value to be a number in the range 0.1 to 1.0. (**Oriol,** ¶0006; 'Kernel width value' of applicant is equivalent to 'range' of Oriol.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Elias and Katz by using sigma as taught by Oriol to have the step of determining the kernel width value comprises defining the kernel width value to be a number in the range 0.1 to 1.0.

For the purpose of using the same scale for all input parameters thus balancing variables from different domains.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 38, 83, 90-92, 94-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elias as set forth above, in view of Jordan. (U. S. Patent Publication 20040077967, referred to as **Jordan**)

Claims 38, 92, 96

Elias does not teach wherein the output device comprises a display.

Jordan teaches wherein the output device comprises a display. (**Jordan,** abstract; 'Display' of applicant is equivalent to 'display device' of Jordan.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by using a display as a output device as taught by Jordan to have wherein the output device comprises a display.

For the purpose of viewing the results

Claims 83, 90, 94, 97

Elias does not teach wherein the biomedical signal comprises an electro-encephalogram.

Jordan teaches wherein the biomedical signal comprises an electro-encephalogram. (**Jordan,** ¶0001, ¶0011, ¶0013) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by using brain waves as taught by Jordan to have wherein the biomedical signal comprises an electroencephalogram.

For the purpose of either establishing a baseline reading or reading a current reading compared to a base line reading to detect differences brain damage

Claims 84, 91, 95, 98

Elias does not teach wherein the medical condition of the patient comprises a seizure.

Jordan teaches wherein the medical condition of the patient comprises a seizure. (**Jordan,** ¶0001, ¶0011, ¶0013) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Elias by looking for seizure characteristics as taught by Jordan to wherein the medical condition of the patient comprises a seizure.

For the purpose of determining or ruling out the condition of seizures.

Response to Arguments

6. Applicant's arguments filed on March 2, 2007 for claims 1-25, 31-33, 37-39, 82-99 have been fully considered but are not persuasive.

7. In reference to the Applicant's argument:

By this paper, Applicant has amended Claims 1-5, 12, 14-16, 20, 31, 33, and 37-39. Claims 26-30, 34-36, and 40-81 have been canceled. Claims 82-99 have been added. Hence, Claims 1-25, 31-33, 37-39, and 82-94 remain pending and are presented for further examination.

Interview with Examiner
Applicant wishes to thank the Examiner for the telephonic interview of February 23, 2007. A summary of the interview is attached hereto. Applicant believes the interview was helpful in advancing the case and invites the Examiner to call the undersigned if there are any remaining questions that might be resolved by further telephonic discussion.

Rejection of Claims 14-31 and 37-81 under 35 U.S.C. § 101
In paragraph 1 of the Office Action, the Examiner rejected Claims 14-31 and 37-81 under 35 U.S.C. § 101 as being drawn to nonstatutory subject matter. Applicant respectfully disagrees with these rejections.

Applicant respectfully submits computer-related inventions are directed to patentable subject matter so long as the "claimed invention "transforms" an article or physical object to a different state or thing," See USPTO Interim Guidelines for Examination of Patent Applications (O.G. Notices, November 22, 2005). See, e.g., In re Lowry, 32 F.3d 1579, 1583-84, (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory). Applicant respectfully submits that a method of processing an input state to provide an output from an electronic device indicative of a classification of the input state, such as are recited in independent Claim 31, recites such a transformation of the electronic device to a different state. For example, one embodiment includes an improved method of classifying data to generate an output of an electronic device. Accordingly, Applicant submits that Claims 31 (and claims 37-39, which depend from Claim 1) do recite patentable subject matter.

Examiner's response:

The 35 U.S.C. §101 rejection stands. The act of classifying or in this case diagnosing a medical condition, without a practical application is non-statutory. How this information is used in a real world setting is a practical application. The claims 1-25, 31-33, 37, 39, 82-85, 87-91, 93-96 are nothing more than an exercise within the computing device. Office Action stands.

8. In reference to the Applicant's argument:

Rejection of Claims 1, 14, 17, and 18 under 35 U.S.C. § 102(b) in view of Katz
On page 4 of the Office Action, the Examiner rejected Claims 1, 14, 17, and 18 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,943,661 to Katz. For the reasons set forth below, Applicant respectfully submits that Claims 1, 14, 17, and 18, as amended, are patentable.

Brief description of one embodiment
One embodiment comprises a method and system in which training data that includes biomedical signal data associated with medical conditions of a particular patient is used to train a neural network that recognizes signal patterns of the particular patient associated with particular medical events in that particular patient. Specification (as publication), paragraph [0009]. For example, in one embodiment, data derived from EEG readings of a particular patient, and associated with seizure and non-seizure periods, is used to train a neural network to recognize and report seizures in a medical instrument. See Id. Desirably, one embodiment of the disclosed system uses a neural network architecture, e.g., a probabilistic neural network, that can be reconfigured in real time to adapt to additional training data, e.g., misclassified biomedical data such as a falsely reported seizure or an unreported seizure.

Katz fails to teach or suggest all elements of Claim 1., as amended

Applicant submits that Katz merely describes a generic method of training a neural network. In contrast, Claim 1, as amended, recites a method of detecting medical events in a medical instrument, the method comprising:

collecting a plurality of training cases in a medical instrument, wherein each training case has an input state indicative of at least a portion of a first biomedical signal of a particular patient and a corresponding output value indicative of a medical condition of the particular patient;

generating a neural network based on the plurality of training cases in the medical instrument;

receiving a second biomedical signal of the particular patient in the medical instrument;

applying the second biomedical signal to the generated neural network to generate an output of the neural network; and

identifying a condition of the particular patient based the output of the neural network.

Applicant respectfully submits that neither Katz, nor any of the other art of record, teaches or suggests the particular method of method of detecting medical events in a medical instrument, including "identifying a condition of the particular patient based the output of the neural network," as recited by Claim 1, as amended. Accordingly, Applicant submits that

Claim 1, as amended, is patentable. Further, as each of Claims 14, 17, and 18, depends, either directly or indirectly, from Claim 1, Claims 14, 17, and 18 are allowable for each of the same reasons.

Examiner's response:

Katz is no longer used for claim 1. Elias is used as a primary reference due to the fact it is a neural network that is used to diagnose ECG readings. This parallels the invention with the substitution of ECC instead of ECG readings. Katz is still used for compression ration values, partitioning and error values associated with partitioning, Office Action stands.

9. In reference to the Applicant's argument:

Rejections of Claims 31 under 35 U.S.C. § 103(a)

On page 27 of the Office Action, the Examiner rejected Claim 31 under 35 U.S.C. § 103(a) as being rendered by Katz in view of U.S. Patent No. 6,324,532 to Spence, et al ("Spence"). In particular, the Examiner indicated that while Katz does not teach "reconfiguring the neural network based on the first training case without retraining the neural network," Spence teaches such. However, for the reasons set forth below, Applicant respectfully disagrees.

In particular, the Examiner takes the position that Spence teaches "reconfiguring the neural network based on the first training case without retraining the neural network" because, referring to Figure 11, "[i]f item 1110 were to be pruned, this would not affect item 1114 thus no retraining required." Office Action at 27. However, Applicant submits that nowhere does Spence disclose pruning of anything with reference to Figure 11. Applicant is therefore unsure of where such disclosure is to be found. Moreover, Spence discloses using a plurality of interconnected networks. Moreover, Applicant submits that nowhere else is this disclosed in Spence. Even if Spence somehow were to disclose "pruning" network 1114 from the illustrated network of networks in Figure 11, Applicant submits that this pruning would not constitute a disclosure of "reconfiguring the neural network to correctly classify the first training case without retraining the neural network" as recited by Claim 31, as amended, because it is not apparent how this pruning of a network would result in "reconfiguring the neural network to correctly classify the first training case." Hence, Applicant submits that Spence fails to disclose or render obvious "reconfiguring the neural network," which the Examiner admits is not disclosed by Katz. Accordingly, Applicant submits that Claim 31 is patentable.

Rejections of Claims 2-25 and 32-38 under 35 U.S.C. 103(a)

On pages 6-61, the Examiner rejected Claims 2-25 and 32-38 in view of various combinations of the references of record. However, for the reasons discussed above, Applicant submits that independent Claims 1 and 31 are patentable. Accordingly, as each of Claims 2-25 and 32-38 depends from one of Claims 1 or 31, Applicant submits that each of those claims is patentable for at least the same reasons.

Examiner's response:

Spence is no longer used as a reference. The reference Elias is used for claim 31. Elias uses a back propagation neural network in which the actual outcome is compared to the ideal outcome and the difference between them is used to adjust the weights. Office Action stands.

Examination Considerations

10. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, l 45-48; p 2100-9, c 1, l 1-4). The Examiner has the full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

11. Examiner's Notes are provided to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and sprit of compact prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior art but link to prior art that one of ordinary skill in the art would find inherently appropriate.

12. Examiner's Opinion: Paragraphs 10 and 11 apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Claims 1-25, 31-33, 37-39, 82-99 are rejected.

Correspondence Information

15. Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner Peter Coughlan, whose telephone number is (571) 272-5990. The Examiner can be reached on Monday through Friday from 7:15 a.m. to 3:45 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor David Vincent can be reached at (571) 272-3080. Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

Receptionist,

Customer Service Window,

Randolph Building,

401 Dulany Street,

Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 272-3150 (for formal communications intended for entry.)

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Peter Coughlan

4/19/2007

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